I. C. 6844 JANUARY 1936

DEPARTMENT OF THE INTERIOR

UNITED STATES BUREAU OF MINES
JOHN W. FINCH, DIRECTOR

INFORMATION CIRCULAR

JADE

BY

ALICE V. PETAR

AFTER THIS REPORT HAS SERVED YOUR PURPOSE AND IF YOU HAVE NO FURTHER NEED FOR IT, PLEASE RETURN IT TO THE BUREAU OF MINES, USING THE OFFICIAL MAILING LABEL ON THE INSIDE OF THE BACK COVER.

Generated on 2024-09-18 01:41 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

I.C. 6844
January 1936

INFORMATION CIRCULAR

DEPARTMENT OF THE INTERIOR - BUREAU OF MINES

JADE[1]

By Alice V. Petar[2]

CONTENTS

	Page
Introduction	2
Description and properties	2
History	4
Geographical distribution	5
China (Turkestan)	5
Burma	6
Germany	7
Alaska	7
New Guinea	7
Other localities	8
Mining Methods (Burma)	8
The Industry in foreign countries	10
Burma	10
Ownership, taxes and royalties	10
Preparation for market and shipment	11
Cutting, grinding, and polishing	11
Production	12
Exports	13
China	13
Import trade	13
Canton market	13
Jade-carving industry	14
Peiping trade in manufactured jade	15
Exports	15
Germany	16

1/ The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from U. S. Bureau of Mines Information Circular 6844."

2/ Metals and Nonmetals Division, U. S. Bureau of Mines.

Generated on 2024-09-18 01:41 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

INTRODUCTION

Through the courtesy of the State Department, the Bureau of Mines has received a comprehensive report on the jade industry of Burma, prepared by American Consul Winfield H. Scott, Rangoon, Burma. This material is the main basis for the present circular, although free use also has been made of reports on the jade industry in China and Germany by consular officers in those countries, to whom footnote credit is given.

The word "jade" is said to be derived from the Spanish "piedra de ijada" (hijada) meaning, literally, "stone of the side," as jade was supposed to cure pains in the side; nephrite (a jade mineral) was named from the Greek word meaning kidney, because it was formerly worn as a remedy for kidney diseases. To the Burmese, jade is known as "Kyauksein," or green stone, and to the Chinese, all varieties of the material are referred to as "Yu" or "Yu-chi".

According to Confucius, jade was symbolical of justice, harmony, intelligence, and humanity, and the Chinese of today believe that by using ornaments made of this stone, the wearer is protected from the "evil eye" as well as from disease.

Ornaments of carved jade were known to the ancient civilizations of Mexico and Peru and to the peoples of other sections of Central and South America. Jade ornaments also have been found in the lake dwellings of Switzerland and in Crete; while in China, as far back as the Chou dynasty (B. C. 1122 - B. C. 255) it was used in the production of various classes of precious vessels and as insignia of rank.

DESCRIPTION AND PROPERTIES

The "jade" or "jadestone" of commerce is nephrite, a variety of amphibole, or jadeite, a member of the pyroxene group. These minerals have many common properties, including hardness, toughness, and ability to retain a high polish. Mineralogically, they are distinguished by the following characteristics:

Mineral	Composition	Color	Luster	Hardness	Specific gravity
Jadeite	$NaAl(SiO_3)_2$	Apple green to nearly emerald green, bluish green, greenish white and nearly white, sometimes white with spots of bright green.	Subvitreous pearly on surfaces of cleavage	6.5 - 7	3.33 - 3.35
Nephrite	$Ca(Mg,Fe)_3(SiO_3)_4$	White to dark green	Glistening	6 - 6.5	2.96 - 3.1

Generated on 2024-09-18 01:42 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

Chloromelanite is a dark-green to nearly black variety of jadeite. Other green stones resembling jade include saussurite, a tough, white to greenish gray variety of zoisite; bowenite, a green serpentine; amazonite, a green microcline feldspar; and massive greenish forms of pectolite, prehnite, and vesuvianite. "California jade" (californite) is a compact, massive vesuvianite; "Oregon jade" is the name applied to rolled pebbles resembling jade, which have been found at various localities in Oregon; and the "jade" found in the Bushveld, Western Transvaal, is massive garnet.

In outward appearance, jade may be mistaken very easily by the unskilled layman for valueless stone, provided it has not been chipped or broken, a difficult operation because it is so hard. The relatively high specific gravity, however, serves as a useful aid to its recognition and preliminary identification.

In Burma, Chinese traders divide the mineral into many classes. Values within each class fluctuate within wide limits, but this is not surprising in a mineral possessing any color from pure white through all the shades of green to amethystine, mauve, violet, and light blue, yellow and orange to various tints of brown, red, and black. It is almost impossible for the layman or the uninitiated to distinguish the peculiar shade of green jade prized by the Chinese.

All of the beautiful green varieties of jade are known as "Ayekyauk" or "color stone" in Burmese. The rarest and most precious of all the varieties produced in Burma is that known as "Myaye". This stone is of a uniform translucent green, with a hardness of 6.5 to 7 and a specific gravity ranging from 3.264 to 3.336. The color has been compared with the green found in the "tail of the peacock" or the color of a "young paddy (rice) shoot".

Next in value is the variety known as "Shweluye" (Burmese; gold tinted), of a lighter shade of green, with bright spots and cloudy streaks. Other green-colored varieties include "Peye", a peagreen stone of almost the same value as "Shweluye", and "Latye", a translucent sage green variety.

With respect to the other varieties produced, "Athakyauk-atha" (Burmese; flesh-colored stone) includes all the brilliant white varieties of jadeite of all degrees of translucency and limpidity. Cheaper varieties include "Athayo", "Huawawe", and "Athapukyi". A white, translucent variety is known as "Pantha". "Kyauk ame", or black jadeite, is blackish green, resembling onyx, but reveals its characteristic greenish hue when held to the light.

The Chinese know nephrite generally as "yu" or "uu-Shih;" deep-green serpentine nephrite and jadeite as "pi-yu;" jadeite of an emerald green and of any shade other than dark green, as "fei-ts'ui." Prehnite is known as "yu-hsi" or "p'u-t'ao-shih." 3/

3/ Cunningham, Edwin S., Consul General, Shanghai, The Jade Industry in China: Commerce Reports, no. 11, Mar. 17, 1930, p. 692.

Generated on 2024-09-18 01:47 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

HISTORY

Although jade (nephrite) undoubtedly was well-known to the Chinese in very ancient times, it was not discovered in northern Burma until the 13th century. It is stated that a piece of stone picked up by a Yunnanese trader, to balance a load on a pack mule, was later found to contain jade of the peculiar shade of green held in such high esteem by the Chinese, and for which Burma is the source of present supply.

Previously, costly white varieties of jade, symbolical of purity in private and official life, had been obtained from deposits in Chinese Turkestan. Green varieties, although extremely uncommon, were not unknown to the Chinese, as indicated by their efforts to obtain the desired color in white jade artificially by burying it with copper. Following the accidental discovery of Burma's dormant resources of green jadeite, numerous expeditions set out from China to obtain supplies of this rare and costly mineral; but owing to the unrelenting hostility of the Kachin or Chinpaw tribe and the intensely malarial character of the jade country, very few of these intrepid Chinese merchants ever returned to their highlands in Yunnan. Moreover, Burma and China were then in a state of almost perpetual warfare, and, although small pieces of jade stone found their way across the frontier, it was not until about 1784, the date of the termination of military activities, that the jade-producing area was located definitely by the Chinese and regular trade in this mineral established between the two countries.

Jade mining always was regarded as the unquestioned prerogative of the Kachins or Chinpaws, and apparently the rights and ownership of this aggressive, intelligent, and semibarbarous hill tribe to the jade produced were never questioned by the early kings of Burma. However, in the early part of the 19th century the Burmese kings appeared first to have become aware of the importance of the jade industry, particularly of its possibilities as a source of revenue, and in 1806 a Burmese collectorate was established at what is now Mogaung, which became the headquarters of the jade trade in Burma. The Kachins, in whose country the jade deposits were situated, were required thereafter to bring their stone to Mogaung for sale to Chinese traders. Before the jade was permitted to leave Mogaung, however, it was necessary to obtain a permit authorizing exportation and to pay an ad valorem duty of 33-1/3 percent. At first this duty was paid in pure bar silver (the use of silver rupees did not come into general use until 1874), but later on the unscrupulous practice of debasing silver bars with lead temporarily served to demoralize the trade and to retard its growth.

Reference to Burmese histories reveals that King Mindon Min (1853-78) endeavored to purchase, for his personal account, all of the jade mined by the Kachins, and he appointed a high official to act as his agent at the mines. However, this attempt to monopolize the industry seems to have been defeated by the Kachins, who, after vainly protesting against outside participation, resorted to the effective method of restricting production to undesirable qualities, whereupon the former system of levying an ad

Generated on 2024-09-18 01:46 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

valorem duty on exports was resumed. The revenue accruing to the king from jade dues, it is stated, ranged from 10,000 to 50,000 rupees (approximately $3,500 to $18,000), the former amount representing the period during which the attempt was made to monopolize the industry.

The period of Burma's maximum prosperity in the jade trade seems to have occurred between 1831 and 1840, when more than 800 Chinese and over 600 Kachins and Shans were engaged in business and laboring operations at the mines. At that time all of the stone was sent by one of several pack-train routes to Yunnanfu, the capital of the bordering Chinese Province of Yunnan. Yunnanfu was the great emporium of the jade trade; the rough stone was bought there by Cantonese merchants and transported overland to Canton. As a result of the war between Great Britain and China in 1841 and military operations at Canton, this lucrative traffic disappeared almost completely, resulting in the rapid accumulation of stocks at the mines. The trade then passed through various vicissitudes until 1861, when the first Cantonese merchant arrived in Mandalay and acquired a fortune by purchasing and shipping by sea to Canton all of these old stocks. Since this date almost all of the jade exported to China has been sent to Rangoon for shipment.

The existence of an early transcontinental trade in nephrite between Turkestan and Europe is indicated by discoveries in many parts of Europe of New Stone Age artifacts of nephrite. However, it is possible that these implements may have been of local origin, inasmuch as a deposit of nephrite was found at Jordansmühl, Silesia, in 1884. The nephrite was associated with serpentine, white granite, and other minerals, which were being quarried for use as road-building material. The presence of nephrite was evidenced by the difficulty experienced in breaking up the serpentine. The quarry finally was abandoned, insofar as its original purpose was concerned, but active steps were taken intermittently to make use of the nephrite. In 1899, at the request of Dr. George F. Kunz, a large block weighing about 2,140 kilograms was cut and shipped to New York for inclusion in the Bishop collection at the American Museum of Natural History.

GEOGRAPHICAL DISTRIBUTION

Occurrences of jade are known in Alaska, Germany (Silesia), New Guinea, and elsewhere, but virtually the only sources of commercial interest are the nephrite of Turkestan and jadeite of Burma.

China (Turkestan)[4/]-The most important source of nephrite is in the Karakash Valley in the Kuen Lun Mountains on the southern borders of Turkestan. The quarries, which have been worked extensively by the Chinese, are 7 miles from the Kirghiz encampment of Balakchi 12 miles southeast of Shahidulla. Other quarries in the Kuen Lun Mountains south of Khotan have been known by the Chinese for 20 centuries but have not been worked for many years. Another locality has been described in the same region on the

4/ Dana, E. S., A System of Mineralogy, 6th Edition, New York, 1911, p. 396.

Generated on 2024-09-18 01:43 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

eastern slope of the Pamir on the Raskemdaria, where nephrite has been mined extensively by the Chinese. From this source, the material for the tombstone (length 192 cm, breadth 36.75 cm above and 34 cm below, height 30 cm) of Timur in Samarkand is believed to have been obtained; white "jadeite" (like that of Burma) is mentioned as occurring in the same deposit. Nephrite has also been reported from the Province of Yunnan, southern China, and from the Youngkong district about 120 miles southwest of Canton.

Burma. - The only jade stone of commercial importance within the Indian Empire is in the jadeite deposits found in the valley of the Uru River, a tributary of the Chindwin, in the Mogaung Subdivision of the Myitkyina District in Upper Burma, lying approximately between lat. 25° and 28' N. and between long. 96° 7' and 96° 24' E. Other deposits are known to exist approximately 10 miles east of Mohnyin and on a bank of the Chindwin River. Jadeite is also found some 200 miles north of Myitkyina, but this deposit is stated to be inaccessible and the quality poor.

The center of jade mining has changed from time to time. Among the quarries of past importance were those at Hsima, Masa, Mopang, Tamukan, and Sanka, now referred to as "the old mines" and almost entirely abandoned. The most interesting of a number of occurrences in the Myitkyina District is centered in the famous jadeite-albite dyke of Tawmaw (25°41'13" North Latitude and 96015'28" East Longitude), which was rediscovered some 55 years ago. Undoubtedly, it was from this area and various boulder deposits in the same neighborhood that the Chinese market obtained its jadeite supplies for centuries past.

On the Tawmaw dike are situated the Dwingyi and Kadonwin mines, which really consist of a series of shafts from which a number of drives have been made along the dike itself. As now exposed at Kadonwin the jadeite occurs in the form of large lenses 5 to 7 feet thick in the albite of the footwall side. A thin layer of amphibolite often separates the two minerals, while the enclosing rocks consist of chloritic schist and brecciated serpentine. The existing working face is about 21 feet across and is filled in on the hanging-wall side with a breccia composed of amphibolite, albite, and jadeite in a calcareous matrix.

In addition to these underground workings large quantities of jadeite are won in the form of alluvial boulders from certain Tertiary deposits and from the Uru boulder conglomerate, both of which fringe the great serpentine mass, with its jadeite-albite dikes, on the east. The Tertiary rocks consist of sandstones, shales, and conglomerates; and in the latter, boulders of serpentine and jadeite occur frequently. Most of the workings, tunnels, quarries, and pits are grouped around Kansi, Lonkin, and Hwehka. The Uru boulder conglomerate, often hundreds of feet thick and believed to be of fairly recent age, contains water-worn boulders of most of the metamorphic and igneous rocks of the district, together with serpentine and jadeite. Active workings in it are mostly clustered around Hpakan and Mamon. Jadeite boulders occasionally are found by native divers in deep pools in the Uru River and by the simple, though often unremunerative, process of

Generated on 2024-09-18 01:41 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

exploiting the "chaungs" (river beds) of the Uru and other small tributary streams.

Germany. - Nephrite is present in a deposit near Jordansmühl, a village 30 kilometers southwest of Breslau. Nephrite has been found, also, as a rolled mass at Schwemmsal near Leipzig, but apparently the Jordansmühl deposit is the only one that is being worked as a source of jade.

Alaska[5] - Since the earliest explorations of the Kobuk Valley in the early eighties, a jadelike material has been known to occur in the central part of the valley. In fact, the name Shungnak is said to be the Eskimo term for this material. Specimens from the Jade Hills west of the Ambler River were identified by F. W. Clarke and G. P. Merrill as nephrite. The Jade Hills have not been examined in detail by any Geological Survey parties, but almost all the streams north of Shungnak contain pebbles and boulders of hard, green, slightly translucent rock that might well be described as jade if that term is used in its general and not its restricted mineralogic sense. These specimens consist of various rocks, some of which are serpentine, others green quartzite, and still others nephrite. None of the pieces examined seemed to be of gem quality. The imperfections are due to cleavage, which causes the rock to split into layers; and to inclusions of other minerals, most commonly magnetite, which spoil the translucence and give the specimens a spotted appearance. Several desultory attempts to develop jade in this region have been unsuccessful, and there is little probability that in the near future any great quantity will be produced. The raw material has relatively low value, so that the inaccessibility of the region, the great preponderance of material of inferior quality, and the small and relatively well controlled market for jade serve as deterrents to commercial exploitation of this resource.

New Guinea. - Nephrite has been found in the Humboldt Bay, Astrolabe Bay, Saddle Mountain, and Collingwood Sound districts. In connection with the Saddle Mountain occurrence the following incident is of interest:[6]

> * * * (Dr. A. B. Meyer) states that after giving a description of the nephrite axes from the Saddle Mountain region in the north of Huon Gulf, German New Guinea, he wrote to his correspondent to ascertain whether it was possible for him to procure specimens in their natural state from the region where the axes had been obtained. His correspondent replied that in his voyages on the Waria and the Hercules Rivers, in the south of Huon Gulf, he had found in

---

5/ Smith, P. S., and Mertie, J. B., Jr., Geology and Mineral Resources of Northwestern Alaska: U. S. Geol. Surv. Bull. 815, 1930, pp. 345-346.

6/ Kunz, George F., Precious Stones. Jade (Nephrite), German New Guinea, Silesia, and Elsewhere: U. S. Geol. Survey Mineral Resources of the United States, 1903, pp. 928-935.

Generated on 2024-09-18 01:41 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

pieces of various sizes in the large sand banks the material out of which these stone axes had been made. He adds, also, that the pieces must have traveled a great distance, as they were entirely smooth and partly polished, with no sharp edges visible. On inquiring of a native how the stone axes were made, the latter seized a piece of nephrite and striking it with a similar one immediately separated it into two smooth long pieces. One of these pieces was struck again, and it again separated as before, and into the form and thickness of one of the stone axes, only requiring further the trimming of the edges. Not all the material, however, is of such texture that axes can so easily be made, as in another locality the correspondent found that the stone did not break so readily in this way. He remarks that the natives have an experienced eye for determining whether the material is well breakable or not. This native manufacture is not carried on any more, because all the axes and adzes that are now used are of commercial iron and steel, which are sold throughout the entire world for a trifle of the cost at which the stone axes can be made. The region of the Hercules River is not yet known, so that it is impossible at present to state what is the real home of the material. It has possibly been carried by the river from the Albert-Edward Mountains, or from the hills between the latter and the Bismarck Mountains. It is an interesting fact that the nephrite has been also observed in the other side streams of the Huon Gulf, showing that it must occur at a number of localities in that general region.

Other localities. - Nephrite has been found at various localities in Irkutsk, eastern Siberia, near Lake Baikal, but only as rolled masses in river beds. In New Zealand it has been much used by the Maoris (called by them Pumamu, Tangiwai, Kawakawa, etc.) and has been obtained from several points on the west coast of the south island.7/ A number of occurrences of nephrite have been reported in the United States, but apparently none is of value as a source of jade. Nephrite pebbles have been found in the River Sann at Cilli, Styria, in the River Mur in the vicinity of Graz, and at other points in Austria; nephrite and jadeite discoveries have been reported at various localities in the Swiss Alps. The use of jade ornaments and charms by natives of Central and South America justifies the belief that jade stone occurs in those regions.

MINING METHODS

Burma. - While valuable stones occasionally are found in the form of boulders and pebbles in the river bed of the Uru River and small tributary streams, jadeite generally shows in the form of large boulders intermingled with others of various sizes embedded in brick-colored or yellow or orange clay, which extends to a considerable depth in some places. At

7/ Dana, E. S., The System of Mineralogy of James Dwight Dana; 6th Ed., John Wiley & Sons, 1911, p.396.

Generated on 2024-09-18 01:43 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

Tawmaw the jadeite forms a layer in the dark-green serpentine that pierces strata of upper Miocene, but more probably of lower Miocene age. Mining, however, is the general method employed in extracting the mineral, and abandoned pits, as well as those in active operation, appear in countless number throughout the area under exploitation.

Except where jade is recovered from the slopes of hills, or where the mines are comparatively shallow and therefore accumulate little or no water, mining operations can be conducted only during approximately 3 months of the year, - from March to May - as the mines generally are flooded during the 6 month monsoon season. All of the mining is done by Kachins, Chinese, and Shan-Burman coolies. Due in part to slightly improved mining methods the number of miners employed now has declined to less than 300. Wages vary according to the character of work performed and range from 4 to 10 annas (approximately $0.09 to $0.23) per day.

Although compressed-air drills and steam-operated hoists and pumps have been introduced recently by several mine operators the methods employed are virtually the same as those in use during the reign of the Burmese kings. Except where the jadeite is extracted from hillsides, all of the mines are open pits ranging in depth from 6 to more than 20 feet, depending upon the location of the site. The most desirable and expensive varieties of green jade are found only in limited quantities, and many tons of poor-quality stones of little or no value are scattered throughout the mining area. Excessive handling and transportation charges make it impracticable to ship this low-grade material to China or other points of consumption.

During the rainy season, or from the end of May to the latter part of November, the mines are filled with water, and the period between the termination of the rains in November and the latter part of February customarily is employed in clearing them of water, after which they are cleaned to remove the accumulated silt and other debris. In several of the mines, steam pumps are used for this purpose; but the traditional methods of employing long bamboo pipes as well as lever hoists using kerosene tins as buckets are in general vogue.

Jadeite is a very tough, hard mineral, and it is extremely difficult to break or chip it, even with sharp modern tools. Where jadestone occurs in large blocks, the Kachin quarrymen heat the surface of the stone by means of large charcoal fires and the fall in temperature during the cool nights cracks the stone. Some progressive mine owners now use modern drills for this purpose. After the stone is cracked, crowbars and wedges are employed and the stone is then broken into smaller pieces by means of hammers and mallets to facilitate transportation. In modern operations holes are drilled into the tough jadeite blocks to facilitate the use of steel wedges, chisels, and hammers. In some instances explosives are now being used.

The primitive method of breaking or cracking jadeite by fire-setting is very injurious to the mineral; the calcining greatly reduces the value

Generated on 2024-09-18 01:42 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

of the stone through excessive cracking. Moreover, the carbon monoxide fumes from the charcoal fires take steady toll among the miners employed in underground pits.

To prevent caving and to minimize inflows of water, which oozes into the mines from fissures separating the serpentine from the jadeite, the walls often are barricaded by bamboo palings interspersed with leaves of clay. In some of the modernized mines small trucks are used for removing both refuse and the jadeite rock, but the traditional method of employing balanced lever lifts constructed of bamboo, with kerosene tins and woven baskets as buckets, is in general use.

THE INDUSTRY IN FOREIGN COUNTRIES

Burma

Ownership, taxes, and royalties. - Following the annexation of Upper Burma by the British on January 1, 1896, as a result of the Third Burmese War, the jade-mining area was first visited by a column of British troops in 1888. Fealty of the Kachin chiefs was obtained, and they were promised the continued ownership of the jade mines. However, the British authorities reserved the right of collecting, at Mogaung, an ad valorem royalty of 33-1/3 percent, which now continues to be farmed out by the local government.

The Kachins of the jade-mine area have the reputation of being the most superstitious of the Chingpaw tribes. They thoroughly believe that the color of jade improves with age, new quarries are opened with elaborate tribal ceremonies, and their quests for the stone as well as their discoveries of it are accompanied by unique and traditionary practices. Any Kachin may obtain a mining license for a nominal fee paid to the Kansi or Hwehka duwas (local Kachin chiefs), but upon the discovery of a particularly valuable block of stone, a large proportion of its value has to be paid to the hereditary owners. Before the mineral leaves the mines, the chiefs also collect a 10-percent ad valorem tax, known as "Manhumanta", together with a toll of 2½ rupees on every muleload or 1 rupee on every coolieload of jadeite removed.

Chinese traders purchase most of the jade at the mines, although a considerable number conduct their affairs at Mogaung. In any event, an expert or middleman is generally employed to settle the price. These middlemen, without exception, are Burmese or Shan-Burmese and from early times have been almost indispensable to the transaction of business; it is stated a charge of 5 percent of the purchase money involved is exacted by them.

Sales are negotiated by means of the Burmese system of finger-pressure bargaining between buyer and seller. This custom, also used in the ruby-mining areas, is conducted secretly under cover of a "longyi" (a skirt worn by Burmese men) or handkerchief, and renders it totally impossible to ascertain the values paid for rough jade.

Generated on 2024-09-18 01:44 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

The stone is then taken to Mogaung, where an ad valorem royalty of 33-1/3 percent, assessed by a valuation committee of merchants, must be paid before the stone is permitted to be removed. According to the special rules relating to the extraction of jade stone, as published in chapter IX of the Burma Forest Manual, "If the owner declines to pay royalty on the value fixed by the licensee, the licensee shall be bound to purchase the jade stone at the price fixed by him, without any abatement, or shall forego the royalty."

Statistics relating to the royalty collected since British occupation are unobtainable; but for the official years ended March 31, 1931 to 1934, inclusive, the amounts are reported as rupees 193,139, 193,963, 84,318, and 43,306, respectively.

Preparation for market and shipment. - After payment of the necessary charges at the mines the stone is transported to Mogaung or Kindat, depending upon the location of the mine, where the royalty is paid to the Government licensee. Coolie transport is expensive; the handling of large stones, weighing approximately 1 ton, requires some 50 coolies at a cost of approximately 1,000 rupees. Bamboo rafts are also employed for transportation.

An unascertainable quantity of stone is shipped overland via Bhamo and Myitkyina to Tengyueh (approximately 100 miles southeast of Myitkyina in the Chinese Province of Yunnan), but the bulk of the jadeite produced in Burma is wrapped in gunny bags, lashed with hemp rope, and transported to Rangoon for direct shipment to Hongkong, Canton, and Shanghai. A considerable quantity of stone is also said to be smuggled across the border into Yunnan in addition to that legally passing over the Burmo-Yunnan border.

The purchase of jadeite in its rough state or boulder form is highly speculative, as the stone is not cut until the government royalty has been paid. The real or market value of the stone is therefore problematical. To overcome this handicap, potential purchasers generally request the owner to expose, by cutting or chipping, a selected section or corner of the stone. Even this is no assurance that the remainder of the stone or boulder will contain the same color as the exposed section, and a stone of unprepossessing appearance may turn out to be extremely valuable although purchased for a very nominal figure. For these reasons, the quantities and values of the jadeite produced and exported are anomalous and misleading. Furthermore, export figures, which once served as a fairly reliable indication of the state of the industry, have lost much of their usefulness; as, since the termination of the official year 1924-25, the local government has discontinued the compilation of transfrontier customs returns.

Cutting, grinding, and polishing. - Some cutting and polishing are carried on in Mogaung, and a negligible amount of work is conducted at the various jade mines. However, the bulk of the activity in cutting, polishing, and carving of various objects found in local bazaars is done at Mandalay. Tengyueh, in the bordering Chinese Province of Yunnan, is reported to be the largest cutting and polishing center in Western China.

Generated on 2024-09-18 01:41 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

The methods now employed in cutting and polishing jadeite closely resemble those in use at Mogok in cutting and polishing rubies, sapphires, and the semiprecious stones found in this area. As the mining, cutting, and polishing of precious stones, as well as jadeite, are directly attributed to early Chinese influence the methods employed by the lapidaries in Burma are stated to be similar to those now in general use in Canton, Shanghai, and Peking.

The jadeite boulders are sawed to workable sizes by means of a primitively constructed instrument resembling a bow, operated by hand. The strings are made of steel, and coarse carborundum and water are steadily poured on the portion of the stone to be cut.

In the grinding process, the stone is rubbed over carborundum slabs about 4 by 10 inches in size. Many of these slabs are prepared locally by mixing either fine or coarse gem sand, from Mogok and other ruby- and sapphire-mining centers, with a gum obtained from trees found in the vicinity of Mandalay, Mogok, Momeik, and Western Yunnan. The abrasive slabs are mounted on rectangular wooden plates, and as many as seven are used in grinding the stone to the desired size. Smaller pieces of jadeite are cut on hand- or foot-operated bronze or copper laps, suitably mounted on wooden frames and fed with fine carborundum powder. In grinding and polishing small pieces the jadeite is affixed with a softened gum to the end of a round piece of wood about 6 inches long. Stones for use in brooches, rings, buttons, beads, bracelets and necklaces are also shaped and polished in this manner, after which the partially finished stones are rubbed on dry bamboo and boiled in a soda-lime-water solution and dried.

Holes in beads and other jade objects are bored by diamond-tipped steel drills, the article first being mounted with gum on a small block of wood. Although China is the principal source of production of jade bangles, ornaments of this character and other objects of personal and household use are produced also in Mandalay by Chinese artists, particularly adept in work of this intricate and delicate character.

Production. - Official statistics covering the production of jadeite in Burma during the calendar years 1924 to 1933 are as follows:

Year	Quantity, cwt.	Value, rupees	Average value per cwt., rupees
1924	2,630.4	860,493	327.1
1925	1,696.5	267,148	157.5
1926	1,203.7	234,456	194.7
1927	2,227.0	239,064	107.3
1928	2,844.5	285,984	100.5
1929	3,450.9	277,356	80.3
1930	1,498.9	366,487	244.5
1931	2,765.0	772,860	279.5
1932	3,025.8	326,373	107.8
1933	1,170.8	129,444	110.5

Generated on 2024-09-18 01:45 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

Exports. - Exports of jadestone from Burma, as recorded in the annual statements of the Seaborne Trade and Navigation of Burma, from 1924 to 1934, by official years (ended March 31), were as follows:

Year	Quantity, cwt.	Value, rupees	Average value per cwt., rupees
1924-25 1/	3,766	706,800	255.5
1925-26	972	162,751	167.4
1926-27	2,139	470,225	219.8
1927-28	1,961	302,440	154.2
1928-29	2,698	582,471	215.8
1929-30	2,137	486,156	227.5
1930-31	1,475	218,522	148.2
1931-32	2,502	352,264	140.8
1932-33	2,654	377,178	142.1
1933-34	1,799	179,723	99.9

1/ Includes transfrontier returns, the compilation of which was discontinued after the official year ended March 31, 1925.

China 8/

Import trade. - Virtually all of the jade imported into China comes from Burma. The best qualities reach Canton by way of Rangoon, inferior grades being sent overland to Yunnanfu via Bhamo. Imports of jadestone into Canton amounted to 392,524 pounds valued at US $175,831 in 1928, and 444,500 pounds valued at US $172,050 in 1929, but in earlier years import values are said to have been in the neighborhood of 4 million Mexican dollars. The rough, uncut jade is shipped from Burma in pieces ranging in weight from 4 catties (3½ pounds) to 7 piculs (933 pounds). The small pieces are packed in strong wooden cases, and the larger simply covered with gunny cloth and tied with rope.

In Canton there are about seven jade-importing firms. They have connections with merchants handling the stone in Burma but are not equipped to transact general import business, as they entrust their trade to buyers despatched to Burma for the purpose. They are unable to correspond in any language other than Chinese or arrange foreign credits or attend to any of the other complicated details involved in import transactions. Occasionally consumers of jadestone subscribe to shares in a temporary concern, which sends a buyer to Burma with sums ranging from $1,500 to $5,000, United States currency, to purchase jade. All importers of jadestone are members of the jade guild, which provides a number of "clubs", formed for the purpose of auctioning the jadestone.

Canton market. - Once a year the market in Canton is open for the sale of imported rock. The sale usually opens in the latter part of the first month of the old-style calendar year and continues as long as jadestone remains to

8/ Ballantine, J. W., Trade of Canton in Precious and Semiprecious Stones: Consular Rept. 12227, Dec. 6, 1930, 10 pp.
Cunningham, Edwin S., The Jade Industry in China: Commerce Repts, March 17, 1930, pp. 692-94.

Generated on 2024-09-18 01:42 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

be sold. Purchasers may be manufacturers, shopkeepers, and even workmen. Anyone who has the capital and confidence in his ability to determine the value of jade may buy rock and send it to contractors to be cut. A careful system of inspection and weighing prevails, and if a contractor or workman steals any part of the rock he is blacklisted.

The whole year's supply is sold at this one season. The main reason is that the houses want to sell their entire stock before the purchasers have a chance to cut up the rocks, for if some should strike bad bargains it would discourage further buying. Also, it is the "psychological" season for buying and selling, with everyone starting business anew.

The rocks for sale are exhibited in the importing house one day ahead of the sale. Each piece is numbered, and prospective purchasers inspect them and note the pieces they want to buy. The outer portion of the uncut stone is rough, coarse, and brown, affording no indication whatever as to the quality of the interior of the block. To give the purchaser some idea of what he is buying, a small portion of the outer part usually is cut away, and the surface thus exposed is polished so as to exhibit the color and quality of the jade. When the block is large, 2 or 3 places may be thus treated, but usually only one part of each block is cut. If the cut portion exhibits a deep green color, a high price will be obtained for the whole block; if a dull gray, the price realized will be correspondingly small. However, large pieces that show a dull gray on the outer surface may be a beautiful shade of green in the center, while pieces exhibiting a deep green on the surface may have an almost worthless interior. It is very difficult, therefore, to estimate the value of jade stones. The average value in Canton for large pieces of uncut jade ranges from about $0.13 to $0.59 per pound. Small pieces of fairly good color and of various sizes and shapes, having no trace of the rough outer portion of the stone, are valued at about $2.50 to $3 per pound. Such pieces usually are imported into China in small lots, packed in strong wooden boxes.

The system of secret bidding is used at the sale. The seller, or "sin sang," as he is called, stands in the middle of the hall, wearing a coat with extra long and wide sleeves. When the number of a piece of rock to be sold is announced the buyers rush up to the "sin sang" and talk prices with their fingers. The "sin sang" has a remarkable memory; not only can he talk price with both hands at the same time, but he is able to remember every number and the price of every piece of rock on sale. When he thinks that he has secured a good price he shouts out the name of the bidder who is entitled to that particular piece of rock, without waiting for further bids. Every buyer, therefore, seeks to present his bid first.

Jade-carving industry.- Canton is the center of the green-jade carving industry, and Peiping, Soochow, and Shanghai are the leading localities for carving white jade. White jade produced there usually is made into bracelets for men, belt buckles, incense burners, vases, and artificial flowers. Canton sets the style for many articles, and lack of standardized machinery or tools makes imitation by workmen in other parts of the country exceedingly

Generated on 2024-09-18 01:44 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

difficult. Likewise, Shanghai styles are not copied easily in Canton. Workmen in Canton are said to be more skilled than those in Shanghai, owing largely to the more thorough organization of the unions or guilds. Many women and children are employed in Shanghai.

The contractor or industrial organizer owns the workshop and tools and solicits orders. Earnings are divided so that the contractor gets 60 percent and the workmen 40 percent. From his 60 percent the contractor provides food and lodging as well as the workshop. Cutters, bracelet makers, plain carvers, and "flowery" or ornate carvers usually are organized in separate groups or unions. The highly specialized ornate carvers are paid about $0.50 a day, and the other groups probably receive $0.20. Apprentices serve 3½ years without pay other than a few dollars 3 times yearly at festival times.

In making articles, there are, in general, four processes: "Ta-kung," or cutting raw materials; "ta-yen," or drilling holes; "shang-hua," or carving figures; and "ta-mo," or polishing the finished product. Considerable manual labor is required - often the equivalent of 100 working days to produce a 4- or 5-inch figure - but attempts to introduce mechanical devices have not been successful. The tools and materials used by the local craftsmen are very simple, and machinery in the ordinary sense of the term is not employed. Iron circular saws are used for shaping the pieces, which are carved into relief by use of lap-wheels, diamond drills, or wire saws. Tubular drills sometimes are used to hollow out interiors of vases, cups, or other receptacles. Polishing tools are fine-grained wood or ox leather and gourd skin smeared with emery or ruby dust. Sand and pulverized garnets also are employed as abrasive materials.

Peiping trade in manufactured jade. - In 1930, there were over 600 firms in Peiping (almost all outside of Chienmen and Hatamen); only 125 were members of the jade guild. Some operate on a small scale and work on raw materials supplied by their customers; others sell jade articles but do not manufacture them. The larger firms usually buy their own raw materials, work them into articles, and sell them on their own premises. Tourist trade is important to the jade industry. Guides generally take tourists to the retail jade stores and assist in the selection of articles. At the Chinese fairs held at various temples in Peiping, jade dealers set up booths, which are well-patronized by both Chinese and foreigners. Popular jade articles are Buddhas, birds, flowers, and beads. Jade articles are purchased particularly as wedding or birthday gifts for prominent Chinese. The Peiping trade is said to amount to as much as 3,000,000 Mexican dollars annually.

Exports. - No statistics are available showing exports from all China to foreign countries; jade is included under "jewelry." Declared exports of jade ware from all China to the United States from 1925 to 1929, inclusive, were as follows:

1925	$ 26,420
1926	149,265
1927	133,373
1928	419,404
1929 (10 months)	344,459

Generated on 2024-09-18 01:46 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

Jade for export consists of necktie pins, cuff buttons, bracelets, earrings, finger rings, watch charms, pendants, beads, and other ornamental pieces. Buddhas usually are made of white jade and are bought by foreigners. Green jade stone and "shou-shan" stone are wrought into all kinds of figures and vessels, of which effigies, birds, animals, ancient wine cups, and sacrificial vessels are for sale mostly in Europe and America, while incense burners are popular among Japanese buyers. It is almost impossible to order by sample, and the American importer therefore must depend largely upon the discretion of his representative in China. The export duty from China is 5 percent ad valorem, plus a surtax of 2½ percent ad valorem and other charges.

Germany9/

In 1933, the Jordansmühl Nephrit Gesellschaft m.b.H. was organized to exploit nephrite deposits near Jordansmühl, Lower Silesia. Four to six laborers are employed intermittently at the quarry. In the absence of facilities for cutting and polishing nephrite in Silesia, blocks of stone are sent from time to time to Idar (Rhineland), the German center for the working of precious and semi-precious stones. So far, no attempt has been made to market the material outside of Germany.

9/ Patterson, Jefferson, American Consul, Breslau, Germany, Nephrite Industry in Silesia, Germany: Consular Rept. 44012, July 5, 1935.

Generated on 2024-09-18 01:44 GMT / https://hdl.handle.net/2027/osu.32435030644074
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY